



## UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
[www.uspto.gov](http://www.uspto.gov)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/576,248	04/18/2006	Yuji Shinohara	127713	2140
27049	7590	04/15/2010		
OLIFF & BERRIDGE, PLC P.O. BOX 320850 ALEXANDRIA, VA 22320-4850				EXAMINER
				BOHATY, ANDREW K
ART UNIT		PAPER NUMBER		
		1786		
NOTIFICATION DATE		DELIVERY MODE		
04/15/2010		ELECTRONIC		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

OfficeAction27049@oliff.com  
jarmstrong@oliff.com

<b>Office Action Summary</b>	<b>Application No.</b> 10/576,248	<b>Applicant(s)</b> SHINOHARA ET AL.
	<b>Examiner</b> Andrew K. Bohaty	<b>Art Unit</b> 1786

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
  - If no period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
  - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED. (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 12 March 2010.
- 2a) This action is FINAL.      2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1,2,5-11,13-21,23,26-28 and 30-36 is/are pending in the application.
- 4a) Of the above claim(s) 14,15,31 and 32 is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 1,2,5-11,13,16-21,23,26-28,30 and 33-36 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All    b) Some \* c) None of:  
 1. Certified copies of the priority documents have been received.  
 2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- 1) Notice of References Cited (PTO-892)  
 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)  
 3) Information Disclosure Statement(s) (PTO/SB/08)  
 Paper No(s)/Mail Date \_\_\_\_\_
- 4) Interview Summary (PTO-413)  
 Paper No(s)/Mail Date \_\_\_\_\_
- 5) Notice of Informal Patent Application  
 6) Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on March 12, 2010 has been entered.
2. This Office action is in response the amendment filed March 12, 2010, which amends claims 1, 5, 6, 9, 10, 16, 17, 27, and 33-36. Claims 1, 2, 5-11, 13-21, 23, 26-28, and 30-36 are pending, where claims 14, 15, 31, and 32 are withdrawn from consideration.

### ***Response to Arguments***

3. Applicant's arguments filed March 12, 2010 have been fully considered but they are not persuasive.
4. Regarding the applicant's arguments that Naito does not disclose, either expressly or inherently, the claimed features, the applicant's claims the purification of a commercially available hole injection/transporting material by using ultrafiltration with a molecular weight cutoff of 3,000 to 5,000 so the amount of impurities in a 2.0 wt% solution having a molecular weight of 5,000 or less is 40 ppm or less, while Naito discloses the purification of the same commercially available hole injection/transporting

Art Unit: 1786

material using ultrafiltration with a molecular weight cutoff of 8,000 to 25,000 and teaches the solution concentration of the final material is between 0.4 - 2.8 wt%. Although Naito discloses an ultrafiltration membrane with a higher molecular weight cutoff, all the impurities having a molecular weight cutoff of 5,000 or less will be removed and the applicant admitted that the process disclosed by Naito would lead to a solution containing the commercially available compound having a concentration of the impurities with a molecular weight of 5,000 or less to be lower than 40 ppm (see argument's page 9 second paragraph). This would lead to the applicant's claimed invention of PEDOT:PSS material in a 2.0 wt% solution having the amount of impurities having a molecular weight of 5,000 or less to be 40 ppm or less. Therefore, Naito inherently teaches the same material as the applicant. The claim contains product by process features and so the products are the same in Naito and the applicant the process used by both does not need to be the same. Since Naito discloses a larger molecular cutoff of 8,000 to 25,000 molecular weight, the filtration used by Naito would remove all impurities having a molecular weight of 5,000 or less. The purified product of Naito and the applicant would both have of impurities having a molecular weight of 5,000 or less of 40 ppm or less for nonionic impurities and 30 ppm or less for cationic and anionic impurities.

5. Furthermore, Naito teaches that low molecular weight solid components are not good when found in the hole injection/transport layer of an organic light emitting device and the amount of these materials should be reduced as much as possible (paragraphs [0006]-[0009]) . It is well known that low molecular weight solid components are bad

and there is legal precedent, that purer forms of known products may be patentable, but the mere purity of a product, by itself, does not render the product unobvious, *Ex parte Gray*, 10 USPQ2d 1922 (Bd. Pat. App. & Inter. 1989). Since the applicants do not provide any secondary evidence of unexpected results for the purified polymer and claim a purer form of a known product, the claims are not unobvious over the prior art and are not patentable.

***Claim Rejections - 35 USC § 102***

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 1, 2, 5-11, 13, 16-21, 23, 26-28, 20, and 33-36 are rejected under 35 U.S.C. 102(b) as being anticipated by Enomota et al (KR 2003/078731), where Naito et al. (US 2004/0018386) (hereafter “Naito”) is a patent family member was will be used as the English translation.

8. Regarding claims 1, 2, 5-11, 13, 16-21, 23, 26-28, 20, and 33-36, Naito discloses a hole transport material (paragraphs [0010] and [0100], poly(3,4-ethylenedioxythiphene/styrenesulfonic acid) (PEDOT.PSS)) having the function of transporting holes in an organic EL device (paragraph [0010]) (Naito discloses the material as a hole injection layer, but the layer transport holes from the anode into the emission layer), wherein the material is dissolved in a solvent to make a 0.4 - 2.8 wt%

solution (paragraph [0084]) and is purified using ultrafiltration with a membrane filter with a molecular weight cutoff between 8,000-25,000 to remove low molecular weight molecules (paragraph [0081]) (This means molecular weights smaller than these value will be removed from the polymer during ultrafiltration). This means impurities having a molecular weight of 5,000 or less will be removed during the purification process. This purification method is similar as the method disclosed by the applicants in the specification, with the only difference being of the membrane filter. Naito teaches the use of a larger molecular weight cutoff filter. This means that not only are the 5,000 molecular weight materials removed from the solution (as taught by the applicants), but larger impurities/compounds are removed as well. Therefore, the amount of the 5,000 molecular weight or less impurities found in Naito will be the same as the applicants. Also, the claim is a product by process; therefore, if the product made using both process are the same, which is the case here, then the process used does not have to been to same. Since both Naito and the applicant use ultrafiltration and have a final concentration of 2.0 wt%, the process of getting to the 2.0 wt% does not matter.

9. Further both the applicants and Naito teach the purification of the same material, PEDOT.PSS (Baytron), and both get the material from the manufacturer place Bayer Co.; therefore, the materials would have been synthesized in the same manner and hole transporting materials will contain the same impurities, such as ethylene glycol, sulfate ions, formate ions, oxalate ions, acetate ions, Na ions, Ma ions, K ions, Ca ions, Cr ions Mn, ions, Fe ions, Ni ions, Zn ions, and Sr ions.

Art Unit: 1786

10. Although Naito does not teach all the different impurities, such as ethylene glycol, sulfate ions, formate ions, oxalate ions, acetate ions, Na ions, Ma ions, K ions, Ca ions, Cr ions Mn, ions, Fe ions, Ni ions, Zn ions, and Sr ions, that the applicants claims are present, the material used by Naito will contain all the same impurities since the materials are the same and are both obtained from the same manufacturer.

11. Even though Naito teaches the use of a larger molecular weight cutoff filter, the lower molecular weight compounds of 5,000 or less will still be removed in the same amount as in the applicants' disclosure since both methods utilize ultrafiltration; therefore, the amount of the impurities in the Naito's and the applicants' solutions will be the same.

12. Since Naito uses similar purification technique as the applicants and use the same material as the applicants (from the same location) the purified material of Naito will have the same properties (i.e. the kinds of impurities and amount of the impurities) as the applicants' solutions containing the purified PEDOT.PSS; therefore, Naito anticipates, all of the applicants' claims and will have all the inherent properties of the solutions (as found in claims 5-8, 10, 11, 23, 26, and 34).

13. Furthermore, Naito teaches that low molecular weight solid components are not good when found in the hole injection layer of an organic light emitting device and the amount of these materials should be reduced as much as possible (paragraphs [0006]-[0009]). It is well known that low molecular weight solid components are bad and there is legal precedent, that purer forms of known products may be patentable, but the mere

Art Unit: 1786

purity of a product, by itself, does not render the product unobvious, *Ex parte Gray*, 10 USPQ2d 1922 (Bd. Pat. App. & Inter. 1989). Since the applicants do not provide any secondary evidence of unexpected results for the purified polymer and claim a purer form of a known product, the claims are not unobvious over the prior art and are not patentable.

***Conclusion***

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew K. Bohaty whose telephone number is (571)270-1148. The examiner can normally be reached on Monday through Thursday 7:30 am to 5:00 pm EST and every other Friday from 7:30 am to 4 pm EST.
15. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, D. Lawrence Tarazano can be reached on (571)272-1515. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1786

16. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/A. K. B./  
Andrew K. Bohaty  
Patent Examiner, Art Unit 1786

/D. Lawrence Tarazano/  
Supervisory Patent Examiner, Art  
Unit 1794